DOCUMENT RESUME

ED 331 993 CE 057 914

TITLE Women in the Skilled Trades and in Other Manual Occupations. Facts on Working Women No. 90-5.
INSTITUTION Women's Bureau (DOL), Washington, D.C.
PUB DATE Jan 91
NOTE 9p.
PUB TYPE Statistical Data (110) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Adults; *Apprenticeships; Blacks; Demography; *Employed Women; *Employment Patterns; Employment Statistics; Hispanic Americans; Manufacturing; *Skilled Occupations; *Skilled Workers; Unskilled Workers; Whites

ABSTRACT

This short profile of the trends in the employment of women in skilled trades and other manual occupations during the 5-year period between 1983 and 1988 shows that the number of women in these occupations rose only modestly. Three tables chart the total numbers of persons employed in the trades by sex for the years 1983 and 1988; persons employed in the trades, by sex and detailed occupations for 1983 and 1988, and total numbers of women in apprenticeships in 1978, 1983, 1988 and first quarter 1989. Some of the trends noted are the following: (1) the 1.2 million women employed as precision production, craft, and repair workers represented only 8.7 percent of such workers in 1988 compared with 8.1 percent in 1983; (2) 26 percent of other manual workers were women, about the same as in 1983; (3) in 1988 only about 2 percent of employed women were in the skilled trades, about the same proportion as in 1983; (4) manufacturing industries had the highest proportion of women in the skilled trades; (5) women were more likely to work as operators, fabricators, and laborers in the professional services industries, where they represented half of the persons employed in such occupations; (6) women in the trades earned 68 percent of the earnings of similarly employed men in 1988; (7) 20 percent of women employed in the skilled trades were Black or Hispanic; and (8) the number of women in apprenticeship programs increased from 3.1 percent in fiscal 1978 to 7 percent in the first quarter of fiscal 1978. (KC)

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ED331998

Facts on Working Women

U.S. Department of Labor
Women's Bureau

No. 90-5
January 1991

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WOMEN IN THE SKILLED TRADES AND IN OTHER MANUAL OCCUPATIONS

WOMEN IN THE TRADES--A FIVE-YEAR REVIEW. The number of women in the skilled trades rose only modestly in the 5-year period ending in 1988. The 1.2 million women employed as precision production, craft, and repair workers represented only 8.7 percent of such workers compared with 8.1 percent in 1983 (1.0 million). (See Table I.) Women were 26 percent of other manual workers--operators, fabricators, and laborers, about the same proportion they were 5 years before (27 percent). Within these broad occupational groups, women remain concentrated in a few "traditionally female" categories such as dressmakers, textile sewing machine operators, and electrical and electronic equipment assemblers in which women use their homemaking skills or which require hand or finger dexterity.

In 1988 only 2 percent of all employed women were in the skilled trades--precision production, craft, and repair occupations--the same proportion as in 1983. About 9 percent of employed women were in other manual jobs--operators, fabricators, and laborers--edging slightly downward from 1983 when 10 percent were so employed. More than 40 percent of employed men worked in these two major occupational groupings.

WOMEN IN THE SKILLED TRADES--PRECISION PRODUCTION, CRAFT, AND REPAIR. The skilled trades--precision production, craft and repair--include mechanics and repairers; the construction trades and extractive occupations; and precision production occupations. (See Table II.)

Mechanics and Repairers--Women represented 3 percent of mechanics and repairers in 1988, the same proportion as in 1983. The largest proportion of women was among telephone installers and repairers (12 percent). Women were also 10 percent of telephone line installers and repairers and 9 percent of data processing equipment repairers. Women were in smaller proportions in other mechanic and repairer jobs.

Construction Trades and Extractive Occupations--Of persons in the construction trades in 1988, 2 percent were women--about the same as in 1983. Women were 6 percent of painters, construction and maintenance workers and 5 percent of insulation workers but in much smaller proportions in other construction trade occupations. Women were also only 2 percent of persons in extractive occupations.

Precision Production Occupations--Precision production occupations include those requiring a

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high degree of precision in the tasks performed, for the attainment of standards. These occupations in many cases require an ability to interpret detailed instructions and specifications. The amount of time spent in training for the exercise of these occupations is substantial, in most cases at least 6 months to a year and in many cases several years.

Women held nearly 24 percent of precision production occupations in 1988, up slightly from nearly 22 percent in 1983. Women accounted for 94 percent of dressmakers--a case of women's traditional skills being transferred from the home to the workplace--and 70 percent of electrical and electronic equipment assemblers, an occupation that requires great finger and hand dexterity. On the other hand, women were only 2 percent of tool and die makers.

WOMEN IN OTHER MANUAL OCCUPATIONS--OPERATORS, FABRICATORS, AND LABORERS. Operators, fabricators, and laborers make up other manual workers. (See Table II.) These workers include: **machine operators, assemblers and inspectors; transportation and material moving occupations; and handlers, equipment cleaners, helpers, and laborers.** Women represented 41 percent of machine operators, assemblers and inspectors in 1988, about the same as in 1983 (42 percent). About 90 percent of textile sewing machine operators were women. On the other hand, only 5 percent of welders and cutters were women.

The proportion of transportation and material moving jobs held by women edged up from 8 percent in 1983 to 9 percent in 1988, with women representing 49 percent of bus drivers but less than 1 percent of workers in locomotive operating occupations.

Women's representation among handlers, equipment cleaners, helpers, and laborers was the same in 1988 as in 1983 (17 percent). Women were 65 percent of hand packers and packagers but only 3 percent of construction laborers.

EMPLOYED WOMEN TRADES WORKERS, BY INDUSTRY. Manufacturing industries had the highest proportions of women in the skilled trades. About 18 percent of skilled trades workers in nondurable goods manufacturing and 16 percent of similar workers in durable goods manufacturing were women. In contrast, only 2 percent of skilled trades workers in mining and 2 percent of those in construction were women, in 1988.

Women were more likely to work as operators, fabricators, and laborers in the professional services industries, where they represented half of the persons employed in such occupations. Nearly half (47 percent) of similar workers in nondurable goods manufacturing were women. On the other hand, only 3 percent of operators, fabricators, and laborers in the construction industry and 4 percent of similar workers in the mining industry were women.

EARNINGS OF TRADES WORKERS. Women in the trades--both in the skilled trades and other manual occupations--earned 68 percent of the earnings of similarly employed men in 1988. (Among all workers, women earned 70 percent of men's earnings.) Women who usually work full time in the skilled trades--precision production, craft, and repair--had median weekly earnings in 1988 of $302 compared with $446 for men. Women in the skilled trades had weekly earnings slightly less than the median of all women workers ($315). In fact, median earnings of women skilled trades workers were slightly below those of women in administrative support occupations ($305) but exceeded those of all other major groups except managerial, professional, and technical.

In some individual skilled trades, workers earned well above the median weekly earnings of all women workers ($315). For example, tool and die makers earned $575, telephone

installers and repairers earned $573, and electrical power installers and repairers earned $554. Workers in extractive occupations had median weekly earnings of $504.

CHARACTERISTICS OF WOMEN IN THE TRADES--AGE, MARITAL STATUS, AND RACE/ETHNIC GROUP

Age and Marital Status

Most women in precision production, craft, and repair work were age 35 and over (58 percent) compared with 53 percent for all women workers. Most were married, husband present (55 percent); 21 percent had never married; 14 percent were divorced; and 5 percent each were separated or widowed. Among all women in the work force, 56 percent were married, husband present; 12 percent were divorced; 4 percent each were separated or widowed; and 24 percent had never married.

Race and Ethnic Origin

The Skilled Trades--Black and Hispanic origin women hold very small proportions of all skilled trades jobs but were one-fifth of women employed in the skilled trades. Black women represented only 1 percent of all persons in the skilled trades--precision production, craft, and repair occupations--but were 11 percent of all women skilled trades workers. As was the pattern of all women skilled trades workers, black women employed in those occupations were more likely to work as electrical and electronic equipment assemblers (24,000). Another 23,000 were supervisors in production occupations and another 19,000 were butchers and meat cutters.

The 104,000 women of Hispanic origin who worked in the skilled trades represented less than 1 percent of all persons in precision production, craft, and repair occupations and about 9 percent of all women employed in those trades. Hispanic women were also most likely to be employed in precision production jobs with 28,000 employed as electrical and electronic equipment assemblers. Another 16,000 were supervisors in production occupations and 11,000 were dressmakers.

There were no black or Hispanic women employees reported in extractive occupations, in many mechanic and repairer jobs, or in most construction trades.

Other Manual Occupations--As in the case for all women workers, black and Hispanic origin women were more likely to hold manual occupations other than in the skilled trades. Black women represented 4 percent of all persons employed in other manual occupations, i.e., as operators, fabricators, and laborers. These 765,000 black women were nearly 17 percent of all women employed in these occupations. Black women employed in these occupations worked primarily as machine operators, assorted materials (160,000), and as textile sewing machine operators (121,000).

Hispanic women represented 3 percent of all persons employed as operators, fabricators, and laborers and 9 percent of all women employed in these occupations. Hispanic women employed in these manual occupations were also more likely to be machine operators, with 135,000 employed as textile sewing machine operators and 128,000 as machine operators, assorted materials.

APPRENTICESHIPS AND OTHER TRAINING.

Apprenticeship is a prescribed paid learning experience during which an individual, called an apprentice, learns a trade through several years of on-the-job training and related instruction. It offers the opportunity to pursue progressively more complex on-the-job work under the tutelage of a master craft worker which, when combined with supplemental instruction, leads to a highly skilled job, and a recognized certificate of completion of the prescribed apprenticeship program. Apprenticeship programs are commonly registered with the Federal Government or a federally approved State apprenticeship agency. Registered programs offer apprenticeships in

over 800 occupations such as carpenter, plumber, aircraft mechanic (electrical and radio), tool and die maker, T.V. and radio repairer, and others. Apprentices who successfully complete registered programs receive certificates of completion from the U.S. Department of Labor or a federally approved State apprenticeship agency. Most registered programs are sponsored jointly by employers and labor unions. The administrative body in such joint programs is called a Joint Apprenticeship Committee (JAC). Currently, there are approximately 44,000 program sponsors and more than 300,000 registered apprentices.

Latest data indicate that women's participation in apprenticeable programs is growing. As indicated in Table III, the number and proportion of women apprentices have increased in recent years. From 1978 to 1988, the percentage of females registered as apprentices increased from 3.1 percent of the total to 7.0 percent for the first quarter of FY 1989.

Women face unique obstacles to apprenticeship--traditionally a male domain. For example, women may have to contend with stereotypical attitudes concerning the kinds of work they can or should handle. Although more women are entering apprenticeship programs and being accepted by their male peers, many feel they need more self-confidence in addition to the abilities required of all apprentices.

Women are acquiring the necessary education and training to meet the skills requirements for entry into the trades. The minimum levels of education required for entry into apprenticeship programs vary. However, a high school education is usually required. Seven percent of women employed in precision production, craft, and repair jobs had completed 4 years of college or more compared with 5 percent of similarly employed men. About 51 percent of women so employed and 54 percent of men had completed 4 years of high school only. Both women and men employed in those occupations had completed a median of 12.5 years of schooling.

Another form of training for entry into the trades is vocational education. In October 1982, 2 million women, representing 54.8 percent of all enrollees, were participants in post-secondary vocational education programs, in an occupational or technical field for the purpose of obtaining a vocational credential, such as a certificate, occupational license, or other diploma or degree.

In a 1984 report on how workers get their training, it was found that qualifying training was necessary for 65 percent of the 11.7 million persons employed in precision production, craft, and repair occupations--somewhat greater than the average for all workers. Sources of training included school, informal on-the-job training, formal company programs, correspondence courses, the Armed Forces, or friends and relatives. Precision production and craft workers exceeded the average for all workers in all sources of training except school. On-the-job training was the predominant source of training for carpenters, plumbers, office machine repairers, and many other workers in precision production, craft, and repair work.

OUTLOOK TO THE 21ST CENTURY.

The number of precision production, craft, and repair jobs is projected to grow more slowly than the average for total employment from 1988 to 2000, just as it did from 1976 to 1988. Nearly all of the 1.4 million total increase in jobs is expected to be in the construction and services industry division. In manufacturing, about 100,000 fewer workers in this major group are projected to be employed in 2000 than in 1988.

Employment in the operators, fabricators, and laborers group, which grew by only 3 percent from 1976 to 1988 is projected to grow by about 1 percent through the year 2000. Although a large decline of nearly three-fourths of a million jobs is projected in manufacturing, job gains in services; wholesale and retail trade; construction; and transportation, communications, and public utilities should result in a net gain of 215,000 jobs by 2000.

This major group is expected to have the largest change in the share of total employment, declining from 14.4 percent in 1988 to 12.6 percent by 2000.

Still, new openings in these areas should provide increased opportunities for women, the major source of entrants into the labor force over the next 12 years. It is projected that women will account for 52 percent of the nearly 43 million workers who will enter the labor force between 1988 and the year 2000.

In a recent National Academy of Sciences study of job segregation, by sex, it was found that despite recent changes in attitudes and new challenges to old beliefs, a variety of barriers--legal, institutional and informal--still limit women's access to occupations in which men have customarily predominated. These include, for example, requirements for nonessential training or credentials that women often lack, preemployment barriers to relevant job training such as age restrictions for apprenticeships, and factors such as work climate, harassment, and sponsorship.

Employment of women in the trades will increase as institutional change reflects reappraisal of sex segregation of jobs and as women continue to prepare for the highly skilled jobs of tomorrow. The U.S. Department of Labor is responsible for ensuring that regulations regarding equal employment opportunity are carried out and, led by the Bureau of Apprenticeship and Training, works to promote increased participation of women in apprenticeship programs. It is anticipated that the next century will provide improved opportunities for women in employment, particularly in nontraditional areas such as the trades.

TABLE I
PERSONS EMPLOYED IN THE TRADES, BY SEX
1983 AND 1988
(Numbers in thousands)

	Precision Production, Craft and Repair	Operators, Fabricators, Laborers
1988		
Total persons employed	13,664	17,814
Total women employed	1,190	4,580
Women as percent of total	8.7	25.7
1983		
Total persons employed	12,328	16,091
Total women employed	1,000	4,282
Women as percent of total	8.1	26.6

TABLE II
PERSONS EMPLOYED IN THE TRADES, BY SEX AND DETAILED OCCUPATIONS, 1983 AND 1988

	1988		1983	
	Total persons employed (in thousands)	Women as percent of total	Total persons employed (in thousands)	Women as percent of total
PRECISION PRODUCTION, CRAFT, AND REPAIR	13,664	8.7	12,328	8.1
Mechanics and repairers	4,454	3.3	4,158	3.0
Supervisors	256	7.1	252	7.0
Mechanics and repairers, except supervisors	4,198	3.1	3,906	2.8
Vehicle and mobile equipment mechanics and repairers	1,811	0.9	1,683	0.8
Automobile mechanics	879	0.7	800	0.5
Bus, truck, and stationery engine mechanics	325	0.5	299	0.6
Aircraft engine mechanics	131	3.7	95	2.5
Small engine repairers	70	0.6	63	0.1
Automobile body and related repairers	194	1.0	199	0.7
Heavy equipment mechanics	159	0.5	162	0.7
Industrial machinery repairers	547	2.7	529	2.2
Electrical and electronic equipment repairers	677	8.0	674	7.4
Electronic repairers, communications, and industrial equipment	165	5.0	155	5.3
Data processing equipment repairers	140	8.8	98	9.3
Telephone line installers and repairers	61	10.0	59	5.6
Telephone installers and repairers	202	12.1	247	9.9
Heating, air conditioning, and refrigeration mechanics	262	0.6	200	0.5
Miscellaneous mechanics and repairers	874	4.5	792	4.0
Office machine repairers	60	6.4	66	3.3
Millwrights	96	2.1	94	1.0
Construction trades	5,096	2.3	4,289	1.8
Supervisors	617	2.2	504	1.3

	1988		1983	
	Total persons employed (in thousands)	Women as percent of total	Total persons employed (in thousands)	Women as percent of total
Construction trades, except supervisors	4,481	2.1	3,784	1.9
Brickmasons and stonemasons	202	0.5	156	0.3
Tile setters, hard and soft	53	1.2	--	--
Carpet installers	108	2.3	88	2.0
Carpenters	1,427	1.5	1,160	1.4
Drywall installers	149	2	95	1.4
Electricians	701	1.4	602	1.5
Electrical power installers and repairers	101	0.4	106	0.2
Painters, constructions, and maintenance	525	5.8	473	4.9
Plumbers, pipefitters, and steamfitters	494	0.4	443	1.1
Concrete and terrazo finishers	85	0.2	64	--
Insulation workers	54	4.9	56	4.8
Roofers	156	1.2	133	0.1
Structural metal workers	48	0.4	63	1.2
Extractive occupations	144	2.1	196	2.3
Precision production occupations	3,968	23.5	3,685	21.5
Supervisors	1,361	15.4	1,210	14.1
Precision metal working	896	6.3	892	5.5
Tool and die makers	145	2.4	148	1.2
Machinists	497	4.8	471	4.1
Sheet-metal workers	126	5.7	127	4.5
Precision woodworking occupations	106	11.8	86	16.7
Cabinet makers and bench carpenters	66	2.6	--	--
Precision textile, apparel and furnishings machine workers	296	58.1	260	58.9
Dressmakers	126	94.4	111	96.1
Upholsterers	84	22.0	67	20.2
Precision workers, assorted materials	529	56.7	452	56.9
Optical goods workers	60	61.4	56	41.5
Dental laboratory and medical appliance technicians	49	32.9	50	41.1
Electrical and electronic equipment assemblers	305	70.0	246	74.2
Precision food production occupations	418	32.4	408	25.5
Butchers and meat cutters	258	21.2	276	15.6

	1988		1983	
	Total persons employed (in thousands)	Women as percent of total	Total persons employed (in thousands)	Women as percent of total
Bakers	126	47.5	105	44.4
Precision inspectors, testers and related workers	126	28.1	130	25.6
Inspectors, testers, and graders	113	25.6	121	24.6
Plant and system operators	236	4.5	247	3.4
Operators, fabricators, and laborers	17,814	25.7	16,091	26.6
Machine operators, assemblers, and inspectors	8,117	40.8	7,744	42.1
Textile sewing machine operators	749	90.1	806	94.0
Welders and cutters	555	4.9	543	5.0
Transportation and material moving operations	4,831	9.0	4,201	7.8
Bus drivers	450	48.5	365	45.5
Locomotive operating occupations	51	0.5	64	2.3
Handlers, equipment cleaners, helpers, and laborers	4,866	17.2	4,147	16.8
Construction laborers	799	3.4	595	2.1
Hand packers and packagers	298	65.3	286	67.0

TABLE III
WOMEN IN APPRENTICESHIPS, END OF PERIOD
FY'S 1978, 1983, 1988, and 1st Qtr. FY 1989

	Number	Percent of Total
1989	18,184	7.0
1988	17,239	6.8
1983	16,710	6.6
1978	8,997	3.1